

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference FP17964	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
International Application No. PCT/AU2003/000957	International Filing Date (day/month/year) 29 July 2003	Priority Date (day/month/year) 1 August 2002
International Patent Classification (IPC) or national classification and IPC Int. Cl. 7 H01M 10/42, H02J 7/00, G01V 1/18		
Applicant HYBRITECH AUSTRALIA PTY LTD et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 10 February 2004	Date of completion of the report 9 November 2004
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer DALE SIVER Telephone No. (02) 6283 2196

I. Basis of the report

1. With regard to the elements of the international application:*
- ☒ the international application as originally filed.
- ☐ the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of
2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:
- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
4. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.
5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 1-15,17-20,22-29	YES
	Claims 16,21	NO
Inventive step (IS)	Claims 2-15,17-20,22-24,26-29	YES
	Claims 1,16,21,25	NO
Industrial applicability (IA)	Claims 1-29	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

- D1 WO 2001/015259 A1 (ALLIEDSIGNAL, INC.) 1 March 2001
D2 WO 1996/035522 A1 (KONINKLIJKE PTT NEDERLAND N.V.) 14 November 1996
D3 WO 1996/017426 A1 (MANITOBA, INC.) 6 June 1996
D4 US 2002/0014878 A1 (CHIANG et al.) 7 February 2002
D5 TANIGUCHI, S. et al. "A method for identifying the full charging point and the degree of deterioration of lead-acid batteries" 10-14 September 2000
D6 US 5677612 A (CAMPAGNUOLO et al.) 14 October 1997

Novelty (N)

D1 discloses a measuring method for battery condition, using the internal resistance of the cells. One embodiment (see Fig. 2) discloses measuring during a charge pulse. The method indicates the battery condition by correlation with tables containing the internal resistance. For a NiCad battery the voltage $v_i = 1.26$ volts and the value of dV/dI is measured during a step charge pulse. Claim 16 lacks novelty in light of D1.

D2 relates to a method for sorting batteries based on measured electrical properties. At least one pulse is applied to the batteries. One measured property is the internal electrical resistance (see page 3 lines 2-7). The measuring instrument may include a voltmeter or oscilloscope (see page 5 lines 9-13). Claim 16 lacks novelty in light of D2.

D3 discloses a battery charging and conditioning circuit (see abstract and figures). The disclosure of D3 matches exactly the apparatus defined in claim 21. The purpose of the conditioning circuit is to lower internal resistance of a lead acid battery (see page 4 lines 1-3,15,16,25-28). Claim 21 lacks novelty in light of D3.

Inventive step (IS)

D3 discloses an apparatus with an automatic selector of charge pulse amplitude given a measured internal resistance. It would be obvious to a person skilled in the art of electrical engineering that the apparatus of D3 could be programmed to allow the user to select the voltage at which the controller is operated. See page 16 lines 20-22. Claim 1 lacks an inventive step when citation D3 is combined with common general knowledge in the art of electrical engineering.

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V (Inventive Step)

D4 discloses a method and apparatus for reconditioning and charging a battery. D4 discloses frequency control of pulses applied to lower the internal resistance of the lead acid battery (see section [0028]). Claim 25 lacks an inventive step when D4 is combined with D3 or D6.

D5 discloses a prototype apparatus for indicating the condition of a lead acid battery (using pulses). The prototype allows the user to select and display the voltage applied to the battery (see Figures 8,9 and 10) as well as the amplitude of the current pulse. Claim 16 lacks an inventive step when D5 is combined with either D1 or D2.

D6 discloses a battery desulfator apparatus (see figures). The frequency of the pulses can be varied proportionately to the state of charge of the battery (see column 1). The operation of the circuit can be initiated at a particular voltage (eg. ≥ 13.5 volts, see column 3 especially lines 49-51). Claim 1 lacks an inventive step when D6 is combined with D3 or D4. Furthermore the inductor, filter, switch wave generator of claim 21 are explicitly disclosed in D6. It would be obvious to a person skilled in the art of battery conditioning that the apparatus can be used to lower internal resistance as claimed in claim 21. Finally since one version of the apparatus of D6 allows varying the frequency, the apparatus of claim 25 lacks an inventive step when D6 is considered in the light of common general knowledge in the art; or when combined with D3 or D4.

Industrial applicability (IA)

The application satisfies PCT requirements for industrial applicability.